

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the **reissuance** of the VPDES permit listed below. This permit is being processed as a **Minor Municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq. The discharge results from the operation of a domestic sewage treatment plant. This permit action consists of reissuing the permit for a five-year term with limitations on pH, BOD₅, TSS, and TRC. SIC Code: 4952

1. Facility Name and Address:

Glen Lyn Sewage Treatment Plant

P.O. Box 88

Glen Lyn, VA 24093

Location: 0.2 miles downstream of Rt 460 bridge through Town Park, Glen Lyn, VA 24093
(Please see location map in **Attachment A.**)

2. Permit No. **VA0080837** Existing Permit Expiration Date: May 12, 2009

3. Owner Contact: Name: Mr. J. Howard Spencer Title: Town Manager
Telephone No: (540) 726-7075

4. Application Complete Date: January 29, 2009

Permit Drafted By: Lynn V. Wise

Date: April 1, 2009

Reviewed By: Kip D. Foster

Date: 4/6/09

Public Notice Dates: from 4/8/09 to 5/8/09

5. Receiving Stream Name: New River River Mile: 30.11
Basin: New River Subbasin: NA Section: 1 Class: IV
Special Standards: u

7-Day, 10-Year Low Flow: 653 MGD

1-Day, 10-Year Low Flow: 565 MGD

7Q10 High Flow: 1034 MGD

1Q10 High Flow: 762 MGD

30-Day, 5-Year Low Flow: 866 MGD

Harmonic Mean Flow: 1939 MGD

30-Day, 10-Year Low Flow: 775 MGD

Annual Average Flow: 3178 MGD

Tidal? YES/NO

On 303(d) list? YES/NO

6. Operator License Requirements: IV 7. Reliability Class: II

8. Permit Characterization:

☐ Private ☐ Federal ☐ State ☒ POTW ☐ PVOTW

☐ Possible Interstate Effect ☐ Interim Limits in Other Document

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Glen Lyn STP

NPDES Permit Number: VA0080837

Permit Writer Name: Lynn V. Wise

Date: April 30, 2009

Major []

Minor [X]

Industrial []

Municipal [X]

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?		X	
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?		X	
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?		X	
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed? <i>slightly lower</i>	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?		X	
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?		X	
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?		X	
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?			X
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)

	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits

	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance	
not a defense	Monitoring and records	Transfers	
Duty to mitigate	Signatory requirement	Monitoring reports	
Proper O & M	Bypass	Compliance schedules	
Permit actions	Upset	24-Hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part II. NPDES Draft Permit Checklist

NA

Region III NPDES Permit Quality Review Checklist – For Non-Municipals (To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet <u>or</u> permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?			
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?			

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?			
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?			

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?			
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?			
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?			
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?			
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a “reasonable measure of ACTUAL production” for the facility (not design)?			
5. Does the permit contain “tiered” limits that reflect projected increases in production or flow?			
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?			

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ) – cont.

	Yes	No	N/A
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?			
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?			

II.D. Water Quality-Based Effluent Limits

	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?			
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?			
3. Does the fact sheet provide effluent characteristics for each outfall?			
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?			
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?			
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?			
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?			
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?			
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?			
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?			
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?			
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?			

NA

II.E. Monitoring and Reporting Requirements

	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?			
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?			
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?			

II.F. Special Conditions

	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?			
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?			
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			

II.G. Standard Conditions

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?			
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance	
not a defense	Monitoring and records	Transfers	
Duty to mitigate	Signatory requirement	Monitoring reports	
Proper O & M	Bypass	Compliance schedules	
Permit actions	Upset	24-Hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?			

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Lynn V. Wise</u>
Title	<u>Environmental Engineer, Sr.</u>
Signature	<u><i>Lynn V. Wise</i></u>
Date	<u>4/30/09</u>

9. Provide a brief description of the wastewater treatment system.

Discharge Description			
OUTFALL NUMBER	DISCHARGE SOURCE	TREATMENT	DESIGN FLOW
001	Domestic Sewage	Extended aeration package plant, chlorine disinfection	0.04 MGD

The Glen Lyn Sewage Treatment Plant treats sewage for a population of approximately 163. Based on DMR data for the past year, the current average daily flow rate is approximately 12,000 gallons per day. The facilities include a bar screen, extended aeration, clarification and chlorination. The effluent is discharged to the New River. Solids are dried on sand drying beds and disposed of in a landfill.

A schematic diagram of the treatment system may be found in **Attachment A**.

10. Sewage Sludge Use or Disposal:

Waste activated sludge is first pumped to aerated sludge holding tanks and then to the sand drying beds for dewatering. The dried sludge is removed and trucked to the New River Resource Authority landfill in Dublin, VA for final disposal.

11. Discharge Location Description:

Please see **Attachment A** for a copy of the USGS topo map which shows the discharge location, significant dischargers to the receiving stream, water intakes, and other items of interest.

Name: Narrows Quadrangle Number: 013D and Peterstown, WV Quadrangle Number: 113A
 Outfall Location: Latitude 37° 22' 24" Longitude 80° 51' 42"

12. Material Storage:

2 5-gallon pails of chlorination tablets
 buffer solution

All materials are stored indoors.

13. Ambient Water Quality Information:

The Glen Lyn STP discharges to the New River at river mile 30.11. The stream is classified as Class IV (Mountainous Zones Waters), with special standard "u", limiting the maximum temperature to 27 °C unless caused by natural conditions and a maximum temperature rise above natural temperatures of 2.8 °C. Critical stream flow determinations were based on the continuous record gage on the New River at Glen Lyn, VA (#03176500). Based upon decreases in the critical flows at the gage, the stream flows at the discharge point have decreased slightly from those determined in 2004.

13. Ambient Water Quality Information (continued):

The critical flows are listed on the front page of this Fact Sheet. A copy of the Flow Frequency Determination memo may be found in **Attachment B**.

The PReP complaint logs from the past five years were reviewed. None were received which may be attributed to the operation of the Glen Lyn STP.

The nearest ambient water quality monitoring station is 9-NEW030.15 located just above the discharge at the Route 460 bridge. The data from 2000 to the present are tabulated in **Attachment B**. The 2008 303(d) report lists the segment of the New River into which the STP discharges as impaired beginning at the I-77 Bridge and extending downstream to the VA/WV State line for not meeting the fish consumption use. The Virginia Department of Health (VDH) issued a fish consumption advisory on August 6, 2001 for polychlorinated biphenyls (PCBs) for the lower portion of the New River (Rt. 114 Bridge downstream to the VA/WV State Line – 52 miles) based on fish tissue collections from carp. An Advisory extension to Claytor dam was issued 08/06/2003 (11.47 miles) recommending that no carp be consumed from these waters and that no more than two meals per month of flathead and channel catfish should be consumed. The PCB Fish Consumption Advisory was further extended upstream on the New River to the I-77 Bridge to include the lower portions of Peak Creek, Reed Creek, and Claytor Lake on 12/02/2004. The VDH advises consumption should not exceed two meals per month for carp and smallmouth bass. The VDH level of concern is 50 parts per billion (ppb) in fish tissue. There are eight fish tissues collection sites reporting exceedances of the WQS based 54 ppb fish tissue value (TV). The impairment source is unknown. A copy of the 2008 Impaired Waters Fact Sheet may be found in **Attachment B**.

14. Antidegradation Review & Comments: Tier 1 _____ Tier 2 XX Tier 3 _____
 The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with the Tier determination. As was previously noted, this segment of the New River is listed on the 2008 303(d) list for failure to meet the fish consumption use. During the 2004 permit reissuance process, the river was classified as a Tier 1 water; however, in accordance with a memo from the Water Division Director dated February 8, 2005, fish consumption advisories do not constitute grounds for a Tier 1 determination. Therefore, the New River in the vicinity of the discharge from the Glen Lyn STP is determined to be a Tier 2 waterbody and no significant degradation of existing quality is allowed.

For purposes of aquatic life protection, "significant degradation" means that no more than 25% the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10% of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The significant degradation baseline (antidegradation baseline) for aquatic life protection is calculated for each pollutant as follows:

$$0.25 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

14. Antidegradation Review & Comments (continued):

The antidegradation baseline for human health protection is calculated for each pollutant as follows:

$$0.10 \text{ (WQS - existing quality)} + \text{existing quality} = \text{Antidegradation baseline}$$

The "antidegradation baselines" become the new water quality criteria in Tier 2 waters and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutant.

Effluent limitations are discussed in detail in Section 16. below. The discharge is in compliance with antidegradation requirements set forth in the Water Quality Standard Regulation, 9 VAC 25-260-30. The antidegradation review was conducted as described in Guidance Memorandum 00-2011, dated August 24, 2000, and complies with the antidegradation policy contained in Virginia's Water Quality Standards.

15. Site Visit: Date: March 31, 2009 Performed by: Lynn V. Wise
Please see **Attachment A** for a copy of the site visit report.

16. Effluent Screening & Limitation Development:

A review of the DMR data for the past five years indicates the facility is in compliance with the current limitations. The limitations from the previous permit were reviewed and carried forward as appropriate. Effluent screening and limitation development documentation may be found in **Attachment C**.

Flow - The design flow of this facility is 0.04 MGD. Daily flow estimations are required.

BOD₅/TSS - The federal secondary treatment regulation (40 CFR Part 133) is the basis for the BOD limitations (30 mg/l monthly average, 45 mg/l max weekly average) in this permit. The New River Basin Water Quality Management Plan (WQMP) shows that the loading from this facility at secondary levels is expected to meet the in-stream dissolved oxygen standards. Excerpts from the Plan may be found in **Attachment C**. The TSS limitations (30 mg/l monthly average, 45 mg/l max weekly average) are also based on the secondary treatment regulation.

pH - The minimum limit of 6.0 and the maximum limit of 9.0 standard units are in accordance with the federal secondary treatment regulations and the water quality standards for this water body.

***E. coli*/Total Residual Chlorine** - The Water Quality Standards (WQS) which became effective on January 15, 2003, included new bacteria standards in 9 VAC 25-260-170.A, as well as the revised disinfection policy of 9 VAC 25-260-170.B. These standards replaced the existing fecal coliform standard and disinfection policy of 9 VAC 25-160-170.

The use of chlorine as a surrogate has been demonstrated for the applicable bacteria standard in accordance with GM 03-2007. Based on the minutes of the Water Permit Manager's conference call on February 4, 2004, 23 study results (all passing) indicated that chlorine appeared to be an appropriate surrogate for *E. coli* testing. Disinfection requirements (residual chlorine monitoring) are included and reported on the Discharge Monitoring Report.

16. Effluent Screening & Limitation Development (continued):

TOXICS

The need for limitations for toxic substances was evaluated using mixing zone and antidegradation concepts. The criteria were calculated using the revised critical stream flows, the plant design flow, MIX.EXE predication of mixing, and for ammonia, the 90th percentile pH and temperature of the resulting mix. The wasteload allocations were calculated and used in the STATS.EXE program. **Attachment C** contains supporting documentation regarding toxic limit evaluations.

Ammonia - In accordance with current agency guidance, the STATS.EXE program was run using a single effluent data point of 9.0 mg/l as representative of the concentration of ammonia in domestic effluents. The program indicated that there was no reasonable potential for the effluent to cause or contribute to violation of the water quality criteria for ammonia. Therefore, no limitations are required.

Total Residual Chlorine (TRC) - In accordance with current agency guidance (Guidance Memo No. 00-2011), all chlorinated effluents must have a chlorine limit. A single fictitious datum that is sufficiently large to force the program to calculate a limit is entered into STATS.EXE. The resulting limitations are a monthly average of 1.4 mg/l and a maximum weekly average of 1.7 mg/l.

Other Toxics - No additional toxics data were collected during the past permit term. During a previous reissuance process, data for copper and zinc were evaluated. It was determined that there was no reasonable potential to violate the water quality standards and no limits were needed. No other suitable toxics data is available. In accordance with Agency guidance, continued monitoring for water quality standards parameters is not required.

Basis for Effluent Limitations

PARAMETER	BASIS
Flow	NA - monitoring only
BOD/TSS	1 - Secondary Treatment
pH	1 and 2
TRC	2, 3

1. Federal Effluent guidelines - 40 CFR Part 133
2. Water Quality-based Limits: - show calculations or cite WQM plan reference
3. Best Engineering Judgement: - provide narrative rationale
4. Best Professional Judgement: - provide narrative rationale
5. Other (e.g. wasteload allocation model): - specify & document with model output or WLA from TMDL or basin plan

17. Basis for Sludge Use & Disposal Requirements:

N/A. No limitations or monitoring requirements. The permittee must handle sludge in accordance with the facility's Sludge Management Plan.

18. Antibacksliding Statement:

In accordance with the Antibacksliding policy, all limits are at least as stringent as in the previous permit.

19. Compliance Schedules: None.

20. Special Conditions:

a. **Additional Chlorine Limitations and Monitoring Requirements**

Rationale: Required by the Sewage Collection and Treatment Regulations, 9 VAC 25-790, Bacteria standards; other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

b. **95% Capacity Reopener**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 2 for all POTW and PVOTW permits.

c. **Indirect Dischargers**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 1 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

d. **O&M Manual Requirement**

Rationale: Required by the Code of Virginia, § 62.1-44.10; the Sewage Collection and Treatment Regulations, 9 VAC 25-790; and the VPDES Permit Regulation, 9 VAC 25-31-190 E.

e. **Licensed Operator Requirement**

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 D and the Code of Virginia §54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators. A class IV operator is required for this facility.

f. **Reliability Class**

Rationale: Required by the Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities. A Reliability Class II has been assigned to this facility.

g. **Sludge Reopener**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C 4 for all permits issued to treatment works treating domestic sewage.

h. **Compliance Reporting Under Part I.A and I.B**

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when toxic pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

i. **Sludge Use and Disposal**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the Department of Health's Biosolids Use Regulations, 12 VAC 5-585-10 et seq.

20. Special Conditions (continued):

j. **Section 303(d) List (TMDL) Reopener**

Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

k. **Pretreatment (Significant Discharger Survey)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-730 through 900, and 40 CFR Part 403 require certain existing and new sources of pollution to meet specified regulations.

l. **Part II, Conditions Applicable to All Permits**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. Changes to Permit:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
		From	To	From	To		
001	None	-----	-----				
Special Condition Changes:							
1. The alternative E.coli limits were added to the "Additional TRC Effluent Limitations and Monitoring Requirements" condition.							4/1/09
2. References to the Regional Office in the 95% Capacity condition were changed.							4/1/09
3. Operations and Maintenance Manual language was updated							4/1/09
4. Added the TMDL Reopener							4/1/09

22. Variances/Alternate Limits or Conditions:

An application testing waiver was granted for fecal coliform monitoring. The facility uses residual chlorine testing to ensure compliance with the fecal coliform standards. A sample type waiver was granted for BOD₅ and TSS. Grab samples, as allowed by the permit, were used in lieu of a 24-hour composite.

Because Warning Letters and/or NOV's have been issued to the facility in the past three years, reducing monitoring frequencies were not considered. (W2006-10-W-0001, October 11, 2006; and W2006-09-W-1007, September 1, 2006).

23. Regulation of Users: 9 VAC 25-31-280 B 9 *If the treatment works is not owned by a state or a municipality, the fact sheet must include a statement about how industrial, indirect dischargers (users) are being regulated.*

N/A. This is a publicly owned treatment works.

24. Public Notice Information required by 9 VAC 25-31-280 B:

All pertinent information is on file and may be inspected, and copied by contacting Lynn V. Wise at: Virginia DEQ, Blue Ridge Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019 Telephone No. (540) 562-6787, lvwise@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

25. Additional Comments:

Previous Board Action: None.

Staff Comments: None

Public Comment:

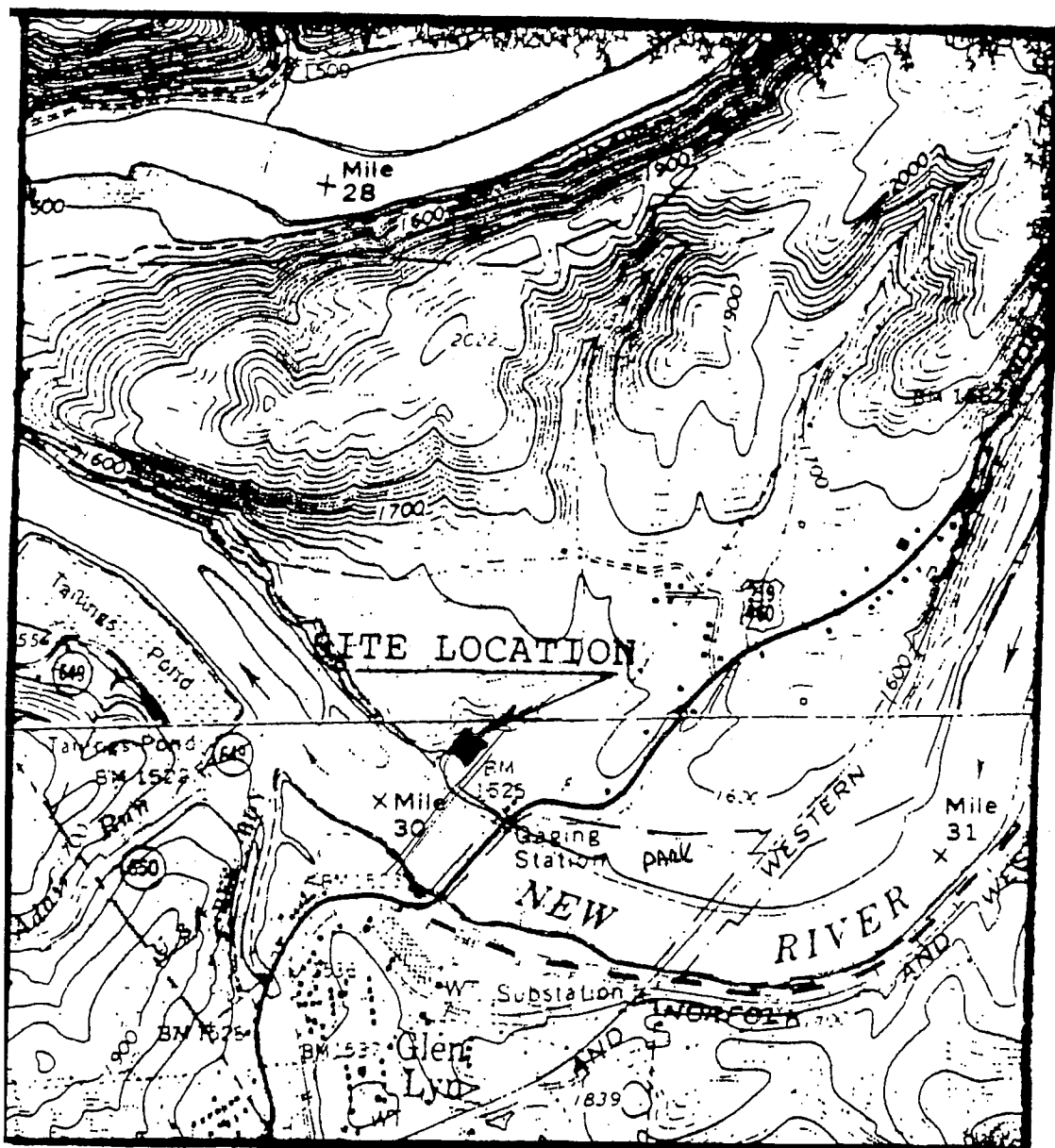
No comments were received during the public notice period.

26. 303(d) Listed Segments (TMDL):

This facility discharges directly to the New River. The 2008 303(d) report lists the segment of the New River into which the STP discharges as impaired beginning at the I-77 Bridge and extending downstream to the VA/WV State line for not meeting the fish consumption use. The Virginia Department of Health (VDH) issued a fish consumption advisory on August 6, 2001 for polychlorinated biphenyls (PCBs) for the lower portion of the New River (Rt. 114 Bridge downstream to the VA/WV State Line – 52 miles) based on fish tissue collections from carp. An Advisory extension to Claytor dam was issued 08/06/2003 (11.47 miles) recommending that no carp be consumed from these waters and that no more than two meals per month of flathead and channel catfish should be consumed. The PCB Fish Consumption Advisory was further extended upstream on the New River to the I-77 Bridge to include the lower portions of Peak Creek, Reed Creek, and Claytor Lake on 12/02/2004. The VDH advises consumption should not exceed two meals per month for carp and smallmouth bass. The VDH level of concern is 50 parts per billion (ppb) in fish tissue. There are eight fish tissues collection sites reporting exceedances of the WQS based 54 ppb fish tissue value (TV). The impairment source is unknown. A copy of the 2008 Impaired Waters Fact Sheet may be found in **Attachment B**.

The TMDL that will be prepared for this segment is not expected to have a WLA for this discharge for PCBs. No limits for these parameters are included in this permit because the effluent is not believed to contain PCBs. In an effort to verify the absence of PCBs in the discharge and to obtain data for development of the TMDL, the soon to be reissued permit for APCO – Glen Lyn will require monitoring for PCBs for the sewage discharge that enters into the Town's system.

ATTACHMENT A
GENERAL FACILITY INFORMATION



SION

ME-8

Glen Lyn

STP.

NOTE: NO Public wells within $\frac{1}{4}$ MI.

Name of owner



Residential



No wells or springs

200,000
gals water
storage
tank

Treatment
plant

Boundary

Discharge
Pt

South
collection

Recreation
area

Booke rd

Residential

4858 1/4 NW
(LEROVA)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ARROWS GUAD.

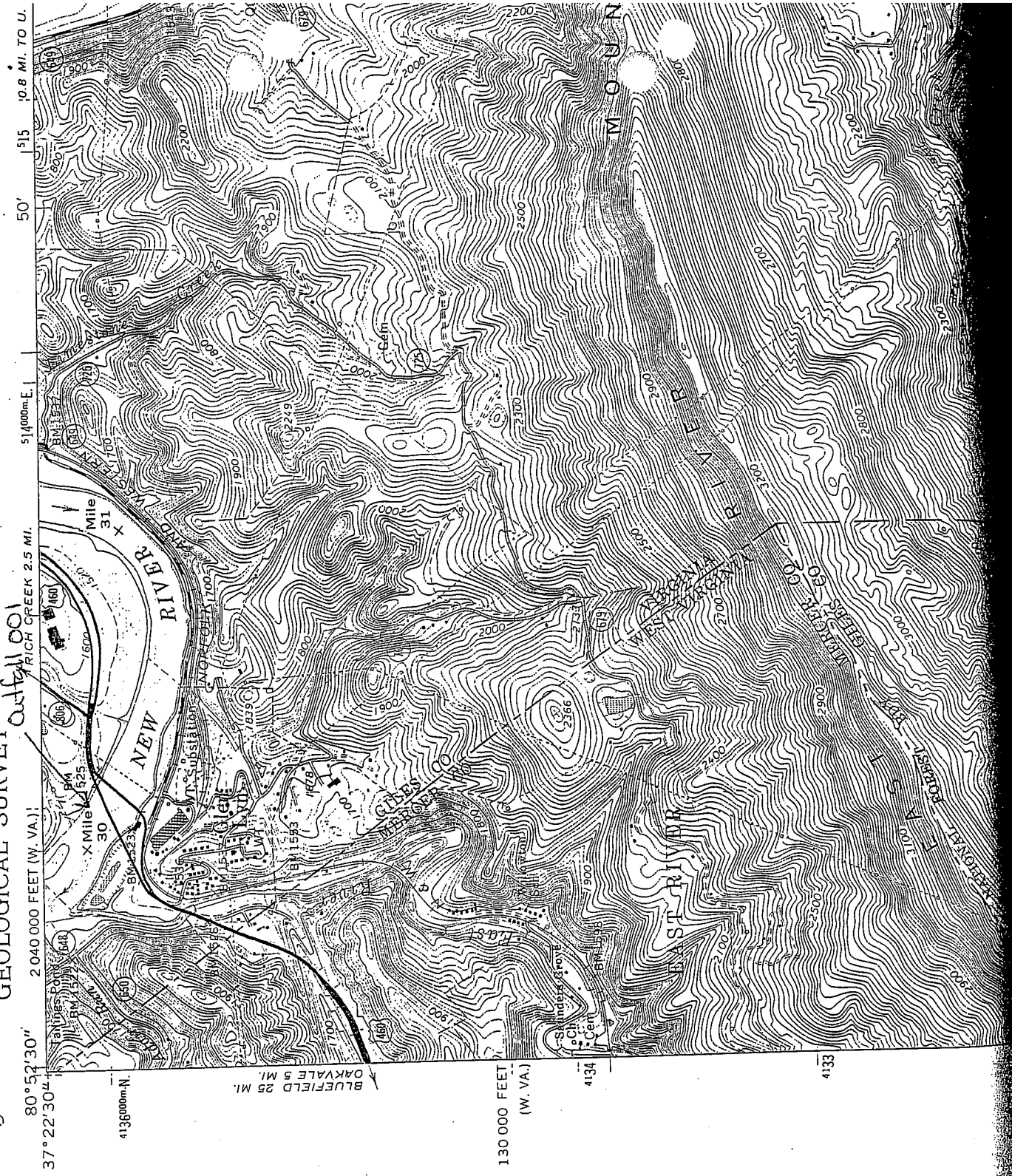
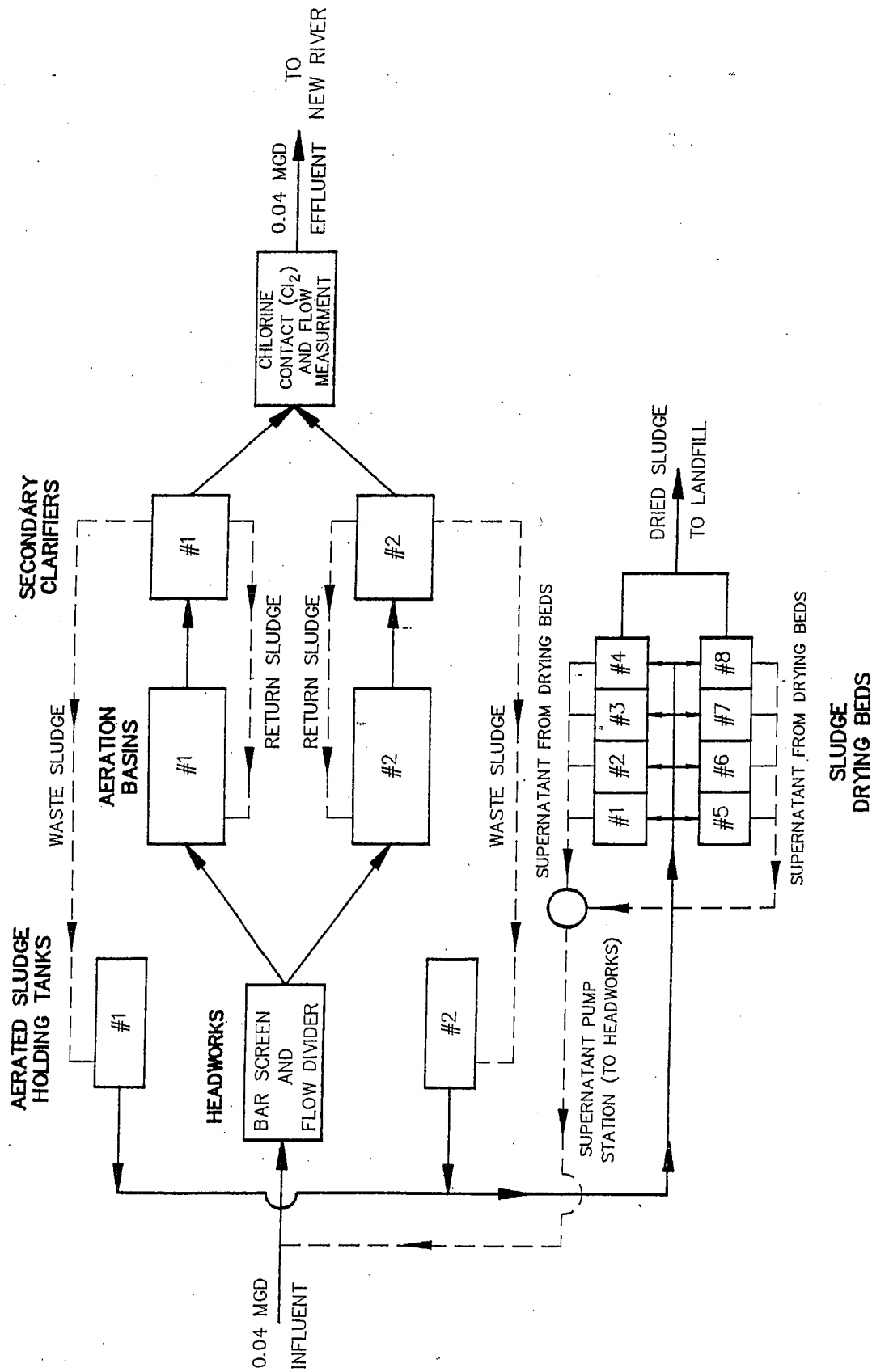


FIGURE III-1



SCHEMATIC FLOW DIAGRAM
GLEN LYN WASTEWATER TREATMENT PLANT

III. DESCRIPTION OF TREATMENT WORKS

A. Flow Diagram - System Components

The Glen Lyn wastewater treatment facility is an extended aeration type plant. The facility includes pretreatment in the form of a bar screen; diffused aeration; secondary settling of solids; chlorination; sludge handling consists of aerated sludge holding tanks and sand bed dewatering.

A schematic flow diagram of the treatment facility is given on the following page (Figure III-1). Raw sewage enters the headworks of the plant through 8-inch diameter gravity sewer. A bar screen removes debris and stringy matter from the wastewater. A gravity flow divider splits the flow to the extended aeration basins.

The wastewater enters duplicate aeration basins operated in parallel for secondary treatment. As the wastewater enters the aeration basin it is combined with aerated mixed liquor and return sludge.

Diffused air is injected into the aeration basin, which is designed for twenty-four hour detention. The even distribution of oxygen stimulates bacteria growth to insure complete oxidation of all organic material. The mixed liquor exits the aeration basin and flows to the secondary clarifiers, which are duplicate units operated in parallel. The biomass and suspended matter in the treated wastewater is settled out in the clarifiers by gravity. The clarified wastewater is then conveyed to a single chlorine contact tank. The clarified effluent is disinfected by means of chlorine tablets. A minimum contact period of thirty minutes is provided to assure adequate destruction of disease causing bacteria.

The disinfected effluent is measured, as it leaves the chlorine contact chamber, by a V-notch weir equipped with an ultrasonic transponder and chart recorder. The effluent flows through 8" outfall line to the New River.

Suspended solids which are settled in the secondary clarifiers are either returned to the aeration basin or pumped as waste sludge to duplicate aerated sludge holding tanks. The sludge is pumped from the holding tanks to the sand drying beds for dewatering. The dewatered sludge is then removed and trucked to the landfill for final disposal.

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office - Roanoke, Water Division

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: Site Visit – Glen Lyn STP
VPDES Permit No. VA0080837

TO: File

FROM: Lynn V. Wise, Environmental Engineer, Sr.

DATE: April 1, 2009

COPIES:

On March 31, 2009, the Glen Lyn Sewage Treatment Plant was visited to gather information as part of the VPDES permit reissuance process. Present representing the Town of Glen Lyn was Mr. Ryan Gilmer, Operator-In Training*; a brief meeting was also held with Mr. Howard Spencer, Town Manager.

The treatment facility has a design flow of 0.04 MGD, but is currently treating an average of 0.012 MGD (according to the past year's DMRs). Sewage is gravity fed to the headworks of the plant, directed through a bar screen and split to two parallel extended aeration package plants. Clarified effluent is disinfected by means of a tablet chlorinator with a chlorine contact tank prior to discharge to the New River. Waste activated sludge is pumped to two aerated sludge holding tanks and is periodically pumped to eight sand drying beds for dewatering. About twice a year, dried sludge is removed and disposed of in a landfill.

The effluent is discharged through an eight-inch pipe fitted with a flapper valve; reportedly the pipe is often underwater. There was no evidence of sludge deposits or algae at the outfall. At the discharge point, the river was estimated to be approximately 600 feet wide. The creek bottom was silty with some large rocks.

It was noted that effluent samples taken for permit compliance are taken at the weir at the end of the chlorine contact tank. Total Residual Chlorine and pH are analyzed on-site; samples for BOD₅ and TSS are sent to REIC (Beaver, WV) for analysis.

Mr. Spencer stated that the Town has applied for a grant to install upgrades to the system including an upgrade to UV disinfection and to wiring at the pump stations.

* The Town is required to employ or contract a Class IV operator. The previous operator has been out on disability and Mr. Gilmer is being trained to fulfill the requirement. It is anticipated that he will sit for the operator's exam to be classified as a Class IV operator in about a month.

ATTACHMENT B

RECEIVING STREAM INFORMATION

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office - Roanoke, Water Division

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: Flow Frequency Determination
Glen Lyn STP; VPDES Permit No. VA0080837

TO: File

FROM: Lynn V. Wise, Environmental Engineer, Sr.

DATE: January 29, 2009

COPIES:

The Glen Lyn STP discharges to the New River in Glen Lyn, Virginia. Stream flow frequencies are required at this site for the purpose of calculating effluent limitations for the VPDES permit.

The USGS has operated a continuous record gage on the New River at Glen Lyn, VA (#03176500) since 1928. The gage is located 1000 feet upstream of the discharge point. The flow frequencies for the gage are based on the regulated period of record from 1940 to present. The flow frequencies for the gage and the discharge point are considered to be equal due to their proximity to one another. The flow frequencies for the discharge point do not address any withdrawals, discharges, or springs that may lie between the gage and the outfall. The flow frequencies for the gage and the discharge point are listed below:

New River at Glen Lyn, VA (#03176500) and at the discharge point:

Drainage Area = 3768 mi²

1Q10 = 874 cfs (565 mgd)	High Flow 1Q10 = 1180 cfs (762 mgd)
7Q10 = 1010 cfs (653 mgd)	High Flow 7Q10 = 1600 cfs (1034 mgd)
30Q5 = 1340 cfs (866 mgd)	High Flow 30Q10 = 2160 cfs (1396 mgd)
30Q10 = 1200 cfs (775 mgd)	HM = 3000 cfs (1939 mgd)
Annual Average = 4918 cfs (3178 mgd)	

The high flow months are January through May.

Collection Date Time	Temp Celsius	Do Probe	Field Ph	00076 TURBIDITY/HACH TURBIDIMETER (FORMAZIN TURB UNIT)	00095 SPECIFIC CONDUCTANCE (UMHSCM @ 25C)	00310 ROD 5 DAY 20 DEGC	00403 PH LAB STANDARD UNITS SU	00410 ALKALINITY TOTAL (MG/L AS CaCO3)	00500 RESIDUE TOTAL (MG/L)	00505 RESIDUE TOTAL VOLATILE (MG/L)	00510 RESIDUE TOTAL FIXED (MG/L)
Perm. Code	Name	Value	Com Code	Value	Value	Value	Value	Value	Value	Value	Value
	06/26/2000 10:30	26	8.5	8.6	300	204.000	2.000 U	57.000	123.000 NULL	26.000	97.000 NULL
	07/25/2000 10:00	20.4	7.5	7.89	3.900	191.000	2.000 U	59.400	120.000 NULL	30.000	90.000 NULL
	08/29/2000 12:00	23.4	7.8	8.24	2.200	199.000	2.000 U	63.100	140.000 NULL	58.000	82.000 NULL
	09/29/2000 11:00	18.6	7.1	7.95	1.200	210.000	2.000 U	67.700	136.000 NULL	49.000	87.000 NULL
	10/17/2000 12:00	12.8	11.4	8.59	830	214.000	2.000 U	69.600	114.000 U	29.000	85.000 NULL
	11/20/2000 10:40	5.3	13.5	8.58	2.100	206.000	2.000 U	65.100	135.000 NULL	37.000	98.000 NULL
	12/20/2000 10:00	1.4	13.3	7.33	10.300	159.000	2.000 U	56.300	141.000 NULL	27.000	87.000 NULL
	01/30/2001 08:20	4.9	11.73	8.39	2.270	221.000	2.000 U	56.600	126.000 NULL	33.000	93.000 NULL
	02/21/2001 12:50	8.5	12.8	8.21	7.070	159.000	2.000 U	47.600	104.000 NULL	23.000	86.000 NULL
	03/15/2001 11:00	9	10.03	8.22	7.080	173.000	2.000 U	57.900	120.000 NULL	35.000	85.000 NULL
	04/16/2001 13:10	14.9	9.5	8.66	4.300	178.000	2.000 U	57.900	120.000 NULL	35.000	85.000 NULL
	05/09/2001 12:45	18.1	9.09	8.52	1.970	200.000	2.000 U	57.900	120.000 NULL	35.000	85.000 NULL
	06/26/2001 14:30	27.3	9.79	8.83	2.670	200.000	2.000 U	57.900	120.000 NULL	35.000	85.000 NULL
	07/17/2001 14:00	25.5	8.16	8.64	4.300	238.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	08/15/2001 10:00	23.5	6.57	8.08	5.900	167.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	09/11/2001 14:20	24.3	9.03	8.76	1.480	204.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	10/25/2001 11:00	17.2	8.77	8.72	1.480	222.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	11/27/2001 09:10	11.4	9.22	8.82	500	212.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	12/18/2001 11:10	9.3	10.08	8.11	1.200	203.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	01/23/2002 13:15	10.5	11.13	8.15	21.000	381.400	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	02/25/2002 11:15	7.3	11.13	8.15	1.300	210.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	03/14/2002 10:55	10.5	11.82	7.65	1.200	208.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	04/29/2002 13:30	14.34	9.6	8.15	4.200	175.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	05/30/2002 12:30	23.88	8.62	8.42	2.500	189.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	06/25/2002 11:45	26.99	8.69	8.75	1.200	234.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	07/30/2002 09:00	25.05	6.01	7.52	7.800	204.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	08/21/2002 10:55	26.08	6.93	8.14	1.600	284.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	09/24/2002 13:20	23.77	7.55	8.28	1.600	240.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	10/30/2002 14:30	14.8	9.47	8.21	2.000	203.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	11/21/2002 09:30	10.4	9.71	7.58	14.600	183.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	12/12/2002 10:00	5.57	11.39	7.45	4.700	180.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	01/22/2003 11:30	2.81	12.2	7.63	3.380	208.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	03/13/2003 14:30	3.4	11.81	8.61	3.820	179.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	04/10/2003 11:45	10.34	11.37	7.67	NULL	174.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	06/12/2003 11:30	9.5	10.06	7.96	NULL	140.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	08/14/2003 11:45	19.68	7.8	7.74	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	10/29/2003 15:15	22.71	7.24	7.74	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	12/16/2003 10:10	14.07	10.04	7.85	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	02/12/2004 10:25	4.31	10.93	6.57	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	04/27/2004 10:00	3.15	11.96	8.12	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	06/15/2004 09:30	13.94	9.28	8.12	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	08/25/2004 11:00	22.2	7.28	7.85	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	10/26/2004 11:00	24.8	8.3	8.2	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	12/16/2004 10:40	15.7	8.3	7.81	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	02/15/2005 11:40	4.57	11.51	7.86	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	04/13/2005 10:25	5.8	11.51	7.63	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	06/14/2005 10:30	11.57	9.85	7.75	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	08/15/2005 10:15	22.1	7.8	7.8	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	10/18/2005 11:00	28.2	7	8.4	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	12/13/2005 10:45	15	11.51	8.04	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	02/09/2006 09:30	4.8	11.3	6.8	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	04/11/2006 10:10	3.4	11.3	8.1	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	06/20/2006 09:50	12.5	9.9	7.4	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	08/15/2006 10:45	24.5	6.6	8	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	10/27/2006 14:35	20.1	9.9	7.9	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	12/17/2006 11:25	5	11.51	8.1	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	03/27/2007 11:50	15.2	10.4	7.1	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	05/17/2007 10:50	17.5	9.7	7.7	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	07/11/2007 11:30	19.7	6.7	8	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	09/11/2007 11:30	25.4	7.2	8	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	11/28/2007 11:00	8.4	13.4	7.5	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	01/15/2008 13:05	4.9	13	7.9	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	03/25/2008 12:35	6.4	12.7	7.9	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	05/20/2008 12:15	16.5	9.7	8.1	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	07/09/2008 12:20	24.2	7.8	7.4	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	09/02/2008 12:15	25.2	8	7.2	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	11/19/2008 09:25	4.6	12.6	7.1	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	01/22/2009 11:25	1.1	14.1	6.5	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL
	03/10/2009 09:25	10.1	10.9	7	NULL	148.000	NULL NULL	57.900	120.000 NULL	35.000	85.000 NULL

New River Ambient Water Quality Data

[illegible]

00625		00665		00680		00900		00915		00925		00940		00945		01000	
NITROGEN, KJELDAHL TOTAL, (MGL AS N)		PHOSPHORUS TOTAL (MGL AS P)		CARBON, TOTAL ORGANIC (MGL AS C)		HARDNESS, TOTAL (MGL AS CaCO3)		CALCIUM DISSOLVED (MGL AS Ca)		MAGNESIUM DISSOLVED (MGL AS Mg)		CHLORIDE, TOTAL IN WATER MGL		SULFATE, TOTAL (MGL AS SO4)		ARSENIC, DISSOLVED (UG/L AS AS)	
Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code
06/26/2000 11:30	400	.070	NULL	NULL	NULL	75.00	NULL	NULL	NULL	NULL	NULL	9.00	NULL	21.30	NULL	NULL	NULL
07/25/2000 10:00	400	.060	NULL	NULL	NULL	72.00	NULL	NULL	NULL	NULL	NULL	7.50	NULL	17.80	NULL	NULL	NULL
08/29/2000 12:00	400	.060	NULL	NULL	NULL	80.00	NULL	NULL	NULL	NULL	NULL	6.00	NULL	18.60	NULL	NULL	NULL
09/26/2000 11:00	200	.080	NULL	NULL	NULL	82.00	NULL	NULL	NULL	NULL	NULL	6.00	NULL	17.40	NULL	NULL	NULL
10/11/2000 12:00	200	.080	NULL	NULL	NULL	87.00	NULL	NULL	NULL	NULL	NULL	7.40	NULL	18.40	NULL	NULL	NULL
11/30/2000 10:40	200	.070	NULL	NULL	NULL	82.00	NULL	NULL	NULL	NULL	NULL	8.40	NULL	22.60	NULL	NULL	NULL
12/29/2000 10:00	200	.080	NULL	NULL	NULL	89.00	NULL	NULL	NULL	NULL	NULL	7.00	NULL	13.00	NULL	NULL	NULL
01/30/2001 08:20	200	.080	NULL	NULL	NULL	82.00	NULL	NULL	NULL	NULL	NULL	11.90	NULL	21.00	NULL	NULL	NULL
02/21/2001 12:50	200	.040	NULL	NULL	NULL	55.00	NULL	NULL	NULL	NULL	NULL	8.90	NULL	12.50	NULL	NULL	NULL
03/15/2001 11:00	300	.060	NULL	NULL	NULL	30.30	NULL	NULL	NULL	NULL	NULL	8.90	NULL	14.50	NULL	NULL	NULL
04/16/2001 13:10	300	.050	NULL	NULL	NULL	61.00	NULL	NULL	NULL	NULL	NULL	9.10	NULL	15.60	NULL	NULL	NULL
05/08/2001 12:45	400	.070	NULL	NULL	NULL	61.00	NULL	NULL	NULL	NULL	NULL	8.40	NULL	17.00	NULL	NULL	NULL
06/21/2001 14:30	400	.070	NULL	NULL	NULL	13.00	NULL	NULL	NULL	NULL	NULL	6.70	NULL	1.00	U	1.00	U
07/17/2001 14:00	300	.080	NULL	NULL	NULL	29.00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
08/15/2001 10:00	300	.080	NULL	NULL	NULL	63.00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
09/11/2001 14:20	200	.070	NULL	NULL	NULL	43.00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/25/2001 11:00	200	.080	NULL	NULL	NULL	50.00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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02/25/2002 11:15	100	.050	NULL	NULL	NULL	36.00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/14/2002 10:55	200	.050	NULL	NULL	NULL	75.00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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05/30/2002 12:30	400	.080	NULL	NULL	NULL	77.30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
06/25/2002 11:45	300	.080	NULL	NULL	NULL	95.00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/30/2002 09:00	300	.080	NULL	NULL	NULL	80.70	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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09/24/2002 13:20	300	.100	NULL	NULL	NULL	54.00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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12/16/2003 11:00	NULL	.070	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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06/25/2004 11:00	NULL	.080	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/26/2004 11:40	NULL	.080	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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11/17/2005 11:25	NULL	.080	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
12/11/2005 11:00	NULL	.080	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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Collection Date Time	31649		32210		32211		32212		32214		32218	
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06/20/2006 09:50	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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01/22/2009 11:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
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Collection Date Time	32219		46570		50091		70300		70307		82079	
	PHEOPHYTIN RATIO (OD 663) SPECTRO BEFORE AFTER ACID		HARDNESS CA MG CALCULATED (MGL AS CaCO3)		MERCURY: FILTRATED WATER, ULTRA TRACE METHOD (MGL)		RESIDUE: TOTAL FILTRABLE (ORIED AT 180C) (MGL)		PHOSPHORUS, IN TOTAL ORTHOPHOSPHATE (MGL AS P)		TURBIDITY, LAB NEPHELOMETRIC TURBIDITY UNITS, NTU	
	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code
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10/17/2000 12:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
11/20/2000 10:40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
12/20/2000 10:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.030	NULL	NULL	NULL
01/30/2001 08:20	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.030	U	NULL	NULL
02/21/2001 12:50	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.020	NULL	NULL	NULL
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07/17/2001 10:00	NULL	NULL	62.850	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
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10/23/2001 11:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
11/27/2001 09:10	1.373	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.020	NULL	NULL	NULL
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01/23/2002 13:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
02/25/2002 11:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
03/14/2002 10:55	1.324	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
04/29/2002 13:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
05/30/2002 12:30	2.463	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.020	NULL	NULL	NULL
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07/30/2002 09:00	1.927	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
08/21/2002 10:55	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	NULL	NULL
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12/16/2003 10:10	NULL	NULL	NULL	NULL	NULL	NULL	99.000	NULL	.040	NULL	11.000	NULL
02/12/2004 10:25	NULL	NULL	NULL	NULL	NULL	NULL	95.000	NULL	.040	NULL	3.200	NULL
04/27/2004 10:00	NULL	NULL	NULL	NULL	NULL	NULL	90.000	NULL	.040	NULL	8.000	NULL
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08/23/2004 11:00	NULL	NULL	NULL	NULL	NULL	NULL	93.000	NULL	.040	NULL	12.300	NULL
10/26/2004 11:40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	7.500	NULL
12/16/2004 10:40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	3.700	NULL
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08/15/2006 10:45	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	3.300	NULL
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03/27/2007 11:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	2.000	NULL
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07/11/2007 11:35	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	4.000	NULL
09/11/2007 11:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	1.800	NULL
11/28/2007 11:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	2.500	NULL
01/15/2008 13:05	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	3.700	NULL
03/25/2008 12:35	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	.500	NULL
05/20/2008 12:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	2.200	NULL
07/09/2008 12:20	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	3.800	NULL
09/02/2008 12:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	2.900	NULL
11/19/2008 09:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	4.500	NULL
01/22/2009 11:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	1.800	NULL
03/10/2009 09:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	.040	NULL	3.700	NULL



2008 Impaired Waters

Categories 4 and 5 by Impaired Area ID*

New River Basin

Cause Group Code: **N29R-01-PCB**

New River, Claytor Lake, Peak Creek and Reed Creek

Location: The impairment begins at the I-77 bridge crossing the New River and extends downstream to the VA/WVA State Line and includes the tributaries Peak Creek and Reed Creek as described below.

City / County: Giles Co.

Montgomery Co.

Pulaski Co.

Radford City

Use(s): Fish Consumption

Cause(s)* /

VA Category: PCB in Fish Tissue/ 5A

The Virginia Department of Health (VDH) issued a fish consumption advisory on August 6, 2001 for polychlorinated biphenyls (PCBs) for the lower portion of the New River (Rt. 114 Bridge downstream to the VA / WVA State Line - 52.0 miles) based on fish tissue collections from Carp. An Advisory extension to Claytor dam was issued 8/06/2003 (11.47 miles) recommends that no carp be consumed in these waters and no more than two meals per month of flathead and channel catfish. The VDH PCB Fish Consumption Advisory was further extended upstream on the New River (13 miles) to the I-77 Bridge to include the lower portions of Peak Creek (4.95 miles), Reed Creek (16.35 miles) and Claytor Lake (4,287 acres) on 12/02/2004. The VDH advises consumption should not exceed two meals per month for carp and smallmouth bass. The VDH level of concern is 50 parts per billion (ppb) in fish tissue.

There are eight fish tissue collection sites within the 2008 data window reporting exceedences of the WQS based 54 ppb fish tissue value (TV). These data are reviewed by the VDH in making an advisory determination. A complete listing of collection sites and associated fish tissue data are available at <http://www.deq.virginia.gov/fishtissue/fishtissue.html>. A more detailed presentation of the data can also be found using an interactive mapping application at <http://gisweb.deq.state.va.us/>. The VDH Advisory information is also available via the web at <http://www.vdh.virginia.gov/Epidemiology/PublicHealthToxicology/Advisories/>.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-N29R_NEW01A02 / New River Lower / New River mainstem from the backwaters of Bluestone Reservoir, Route 460, to the confluence of Rich Creek.	5A PCB in Fish Tissue	2002	2014	3.14
VAW-N29R_NEW02A02 / New River Middle 1 / New River mainstem from the mouth of Rich Creek upstream to the confluence of Wolf Creek.	5A PCB in Fish Tissue	2002	2014	3.50
VAW-N29R_NEW03A02 / New River Middle 2 / New River mainstem from the confluence of Wolf Creek upstream to the Celanese Acetate Plant outfalls.	5A PCB in Fish Tissue	2002	2014	2.79
VAW-N29R_NEW04A02 / New River Upper / New River mainstem from the Celanese Acetate Plant outfalls upstream to the watershed boundary at the confluence of Stony Creek.	5A PCB in Fish Tissue	2002	2014	5.65
VAW-N35R_NEW01A00 / New River / New River mainstem from the Rt. 460 Bridge at Glen Lyn downstream to the Virginia/West Virginia State Line.	5A PCB in Fish Tissue	2002	2014	6.85

New River, Claytor Lake, Peak Creek and Reed Creek

Estuary*
(Sq. Miles)

Reservoir*
(Acres)

River*
(Miles)

*Impaired Area ID: VAW-N29R-01 - Fish Consumption

PCB in Fish Tissue - Total Impaired Size by Water Type:

21.93

Sources:

Source Unknown

*Incorporates only those Cause Group Codes assigned to the Impaired Area ID. Header Information: Location, City/County, Cause/VA Category and Narratives describe the total impaired area per Cause Group Code. Sizes may not reflect the entire specific Cause impairment.

ATTACHMENT C

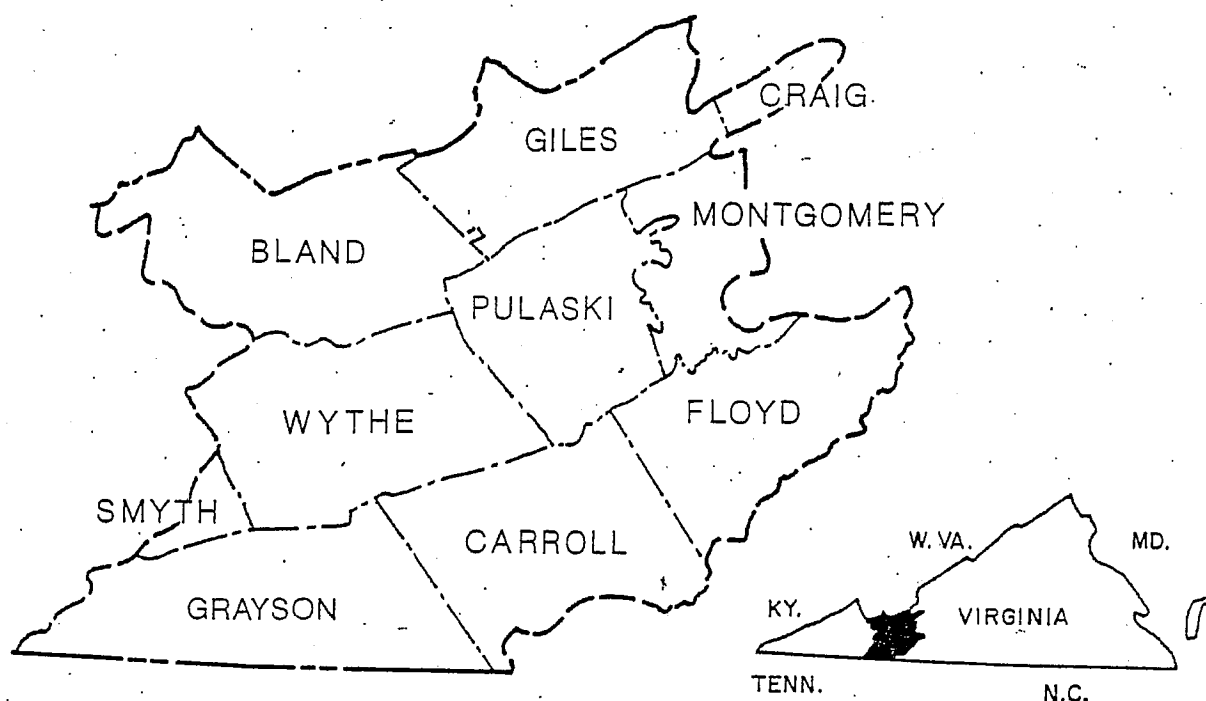
EFFLUENT SCREENING AND LIMITATIONS

Glen Lyn STP DMR Data - Permit No. VA0080837

DMR Due Date	Flow		BOD5		TSS		pH	
	Average	Max	Average	Max	Average	Max	Min	Max
10-Jul-04	0.011	0.013	12.4	12.4	16.5	16.5	7.09	7.29
10-Aug-04	0.011	0.014	13.6	13.6	12.1	12.1	6.99	7.28
10-Sep-04	0.012	0.014	12.7	12.7	9.3	9.3	7.09	7.36
10-Oct-04	0.013	0.017	11.3	11.3	8.5	8.5	6.8	7.6
10-Nov-04	0.013	0.017	11.3	11.3	8.5	8.5	6.8	7.6
10-Dec-04	0.013	0.015	12.3	12.3	8.1	8.1	6.5	6.9
10-Jan-05	0.013	0.015	14.2	14.2	13.8	13.8	6.3	6.8
10-Feb-05	0.015	0.017	12	12	11.3	11.3	6.5	7.2
10-Mar-05	0.014	0.015	9.7	9.7	8.1	8.1	6.7	7.4
10-Apr-05	0.014	0.018	12.2	12.2	9.7	9.7	6.9	7.3
10-May-05	0.011	0.013	9	9	8.6	8.6	6.8	7.1
10-Jun-05	0.01	0.014	11.3	11.3	14.6	14.6	6.5	6.9
10-Jul-05	0.012	0.014	12.9	12.9	16.3	16.3	7.1	7.4
10-Aug-05	0.01	0.011	11.9	11.9	9.2	9.2	7.3	7.6
10-Sep-05	0.012	0.013	12.3	12.3	9.4	9.4	7.3	7.5
10-Oct-05	0.008	0.009	8.6	8.6	6.2	6.2	6.99	7.14
10-Nov-05	0.009	0.01	8.1	8.1	6.2	6.2	7.14	7.26
10-Dec-05	0.011	0.013	9.2	9.2	8.6	8.6	7.05	7.27
10-Jan-06	0.01	0.012	11.3	11.3	14.6	14.6	7.03	7.26
10-Feb-06	0.01	0.012	17.3	17.3	21.7	21.7	7.16	7.29
10-Mar-06	0.01	0.014	14.4	14.4	13	13	6.2	7.6
10-Apr-06	0.01	0.012	12.3	12.3	14.8	14.8	6.49	8.33
10-May-06	0.011	0.02	10.3	10.3	5	5	6.47	7.59
10-Jun-06	0.011	0.016	26.4	26.4	13	13	6.1	7.57
10-Jul-06	0.012	0.02	9.9	9.9	11.1	11.1	6.31	7.28
10-Aug-06	0.01	0.012	11.4	11.4	13.3	13.3	6.24	7.39
10-Sep-06	0.01	0.014	13.1	13.1	10	10	6.12	7.03
10-Oct-06	0.01	0.012	16.2	16.2	16.4	16.4	6.12	7.25
10-Nov-06	0.009	0.012	15	15	21.7	21.7	6.33	7.41
10-Dec-06	0.01	0.016	11.4	11.4	8.1	8.1	6.15	7.16
10-Jan-07	0.009	0.012	18.3	18.3	21.6	21.6	6.2	7.06
10-Feb-07	0.01	0.014	15	15	14.2	14.2	6.12	6.59
10-Mar-07	0.009	0.01	23.6	23.6	23.4	23.4	6.5	7.26
10-Apr-07	0.01	0.014	23.7	23.7	18.1	18.1	6.03	6.93
10-May-07	0.01	0.014	18.6	18.6	11	11	NULL	7.01
10-Jun-07	0.008	0.01	17.6	17.6	14.9	14.9	6.09	6.93
10-Jul-07	0.009	0.01	23.7	23.7	20.5	20.5	6.1	6.9
10-Aug-07	0.009	0.014	23.7	23.7	17.8	17.8	6.2	6.7
10-Sep-07	0.009	0.012	16.8	16.8	13.2	13.2	6.2	7.1
10-Oct-07	0.01	0.022	<QL	<QL	5.1	5.1	6.5	7.2
10-Nov-07	0.01	0.016	6.5	6.5	6.9	6.9	6.5	6.9
10-Dec-07	0.01	0.018	9	9	4.2	4.2	6.6	7
10-Jan-08	0.011	0.022	10.6	10.6	6.1	6.1	6.1	6.8
10-Feb-08	0.01	0.016	13.1	13.1	10.8	10.8	6	7.1
10-Mar-08	0.01	0.024	5	5	15	15	6	7.1
10-Apr-08	0.01	0.02	4	4	11	11	6.1	7.5
10-May-08	0.01	0.02	<QL	<QL	7	7	6.3	8
10-Jun-08	0.007	0.01	6	6	5	5	6.3	7.9
10-Jul-08	0.01	0.035	<QL	<QL	7	7	6.8	7.2
10-Aug-08	0.025	0.035	<QL	<QL	4	4	6.25	7.23
10-Sep-08	0.02	0.03	<QL	<QL	6	6	6.2	7.25
10-Oct-08	0.02	0.03	<QL	<QL	6	6	6.3	7.6
10-Nov-08	0.02	0.03	<QL	<QL	6	6	6.8	7.53
10-Dec-08	0.02	0.03	<QL	<QL	6	6	6.9	7.65
10-Jan-09	0.02	0.025	<QL	<QL	6	14	6.7	7.9
10-Feb-09	0.03	0.035	<QL	<QL	5	15	7.3	8.06
10-Mar-09	0.025	0.03	<QL	<QL	12	12	6.37	7.74
	0.012	0.035	13.2	26.4	11.1	23.4	6	8.33

STATE WATER CONTROL BOARD

NEW RIVER BASIN



COMPREHENSIVE WATER RESOURCES PLAN

VOLUME V-A

Part 1 of 3

RIVER BASIN WATER QUALITY MANAGEMENT PLAN

Planning Bulletin 205A

1976

APPENDIX A

Stream Profiles

Introduction

The graphs in Appendix A show five-day biochemical oxygen demand (BOD_5), stream assimilation capacities, background BOD_5 from non-point pollution sources, and total present and projected BOD_5 loadings for receiving streams in the Basin through the year 2020.

A receiving stream BOD_5 assimilation capacity is the maximum total loading the stream can receive and still maintain stream standards for dissolved oxygen during 7-day-10-year low flow conditions. Stream assimilation capacity is shown on the profiles as the yellow line. Background loadings are shown in green and present total BOD_5 loadings in blue. Projected future total BOD_5 loadings for 1980, 2000, and 2020 are also shown. Where a present or future total BOD_5 loading curve crosses above the stream assimilation capacity (yellow curve), violations of dissolved oxygen standards for that stream are expected to occur during low flow conditions.

On some stream segments in the Basin, removing 100 percent of the point source loadings will still not achieve stream standards. Diffuse, domestic, and direct discharges outside the planning areas are the source of this problem. In areas where this was encountered, it was assumed that implementation of the NPDES permit program along with strict enforcement of direct discharge regulations by local and state

authorities will result in a 90 percent removal of these wasteloads. With this accomplished, the relationship between total stream loading and assimilation capacity was reassessed and loading reductions required beyond secondary treatment and BPT allocated among significant discharges when needed.

The total loading curves on these streams, therefore, reflect 10 percent diffuse loadings, non-point source background loadings, and secondary effluent loadings from point sources in the planning area. If assimilation capacity is still exceeded, allocation of reductions beyond secondary and BPT required to meet stream standards are proposed as part of the Basin Plan but are not shown on the curves.

Implementation of secondary treatment for all significant municipal point discharges and the BPT equivalent for industries was assumed for point discharges on all streams by 1980. Therefore, advanced waste treatment, zero discharge, or growth control methodologies must be employed for point discharges situated on segments where violations are shown from 1980 through 2020. In effect, this would bring all future total BOD₅ curves to levels below stream assimilation capacity.

When non-degradation standards as authorized in Section 62.1-44.4(2) of the State Water Control Board Law are applied to surface streams, the 1980 total BOD₅ curve is assumed as the limit for :

allowable in-stream BOD₅ on surface waters presently experiencing violations of standards. If a stream is currently not experiencing dissolved oxygen violations, the present total BOD₅ curve is the accepted non-degradation limit.

Stream assimilation capacities for the New River Basin were determined by using a regression equation derived by the Tennessee Valley Authority:¹

$$Y = \frac{398,700 (DO_{mix})^{0.951} Q^{1.026} S^{0.580}}{T^{1.474} (DO_{sag})^{1.434}}$$

Where: Y = BOD assimilation capacity (pounds/day)
DO_{mix} = dissolved oxygen concentration of the mixed stream and effluent flow (ppm)
Q = combined effluent and stream flow (cfs)
S = channel slope (feet/foot)
DO_{sag} = dissolved oxygen concentration allowable at the sag point (ppm)
T = stream temperature (degrees Celsius)

Stream temperature at any reference point on a section was computed on the basis of 20° Celsius for drainage area runoff, 22° Celsius for wastewater, and 24° Celsius from impoundments.

Stream flows at the reference point were assumed to be at 7-day consecutive low flow with a 10-year recurrence interval. This flow was computed by determining the proportional drainage area located above the reference point and calculating flow based upon the applicable

¹Tennessee and Big Sandy River Basins, Volume IV, p. TBS.

critical discharge value. Drainage areas were increased as tributaries entered the main stream at the appropriate river mile location.

The initial dissolved oxygen concentration of receiving streams was assumed to be 7.2 mg/l. Channel slopes were calculated by locating differential elevations as close to the confluence of tributaries as possible.

Dissolved oxygen values at the sag point were assumed to be at the stream standard for minimum concentration as established by the Virginia State Water Control Board. Where exact figures were not available, the dissolved oxygen concentration of the mixed effluent and stream flow was obtained using the following formula:

$$DO_{mix} = \frac{(DO_S Q_S) + (DO_W Q_W)}{Q_S + Q_W}$$

Where:

- DO_{mix} = dissolved oxygen concentration of the mixed stream and effluent flow (ppm)
- DO_S = receiving stream dissolved oxygen (ppm)
- DO_W = effluent dissolved oxygen (ppm)
- Q_S = stream flow (cfs)
- Q_W = effluent flow (cfs)

BOD_5 projections were based upon per capita loadings of from 0.20 pounds per day per capita in 1974 to 0.25 pounds per day per capita in 2020. Sewage flows from domestic sources were projected on the basis of 100 gallons per day per capita in 1974 and 175 gallons per day per capita in 2020.

The pollution parameter most frequently examined in this study is BOD. Other parameters were not modeled. However, data on iron and

manganese, acidity, nutrients, etc. were compiled from monitoring information and problem areas identified on this basis.

Receiving Stream Description

New River. The BOD profile, as shown on Plate A-1, indicates that the receiving stream meets water quality standards for present stream conditions and for those anticipated through the year 2020. The 7-day-10-year low flow of New River is quite large, resulting in a very high BOD assimilation capacity. The major sources of BOD loadings on the stream include the following: Independence, Fries, Galax, Austinville, Wytheville, Rural Retreat, Hillsville, Pulaski, Floyd, Fairlawn, Radford, Radford Arsenal, Blacksburg, Pearisburg, Narrows, Rich Creek and Bluefield. The Fries, Fairlawn, Radford, Radford Arsenal, Pearisburg, and Narrows discharges are directly to New River, while the remaining discharges are to tributaries of New River. The loadings do not result in violation of BOD assimilation capacity for the river.

Fox Creek. The BOD profile, as shown on Plate A-2, indicates that the receiving stream meets water quality standards for present stream conditions and for those anticipated through the year 2020. A proposed impoundment on the stream would reduce the BOD loading by sedimentation. The major source of pollution on the stream is the loading from its tributary, Middle Fox Creek, but this loading does not result in a violation of stream standards.

A-6

Mixing Zone Predictions for

Town of Glen Lyn STP

Effluent Flow = 0.04 MGD
Stream 7Q10 = 653 MGD
Stream 30Q10 = 775 MGD
Stream 1Q10 = 565 MGD
Stream slope = 0.001 ft/ft
Stream width = 600 ft
Bottom scale = 2
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.8835 ft
Length = 277706.47 ft
Velocity = .8945 ft/sec
Residence Time = 3.5932 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 55.66% of the 7Q10 is used.

Mixing Zone Predictions @ 30Q10

Depth = 2.0879 ft
Length = 254740.48 ft
Velocity = .9577 ft/sec
Residence Time = 3.0786 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 64.96% of the 30Q10 is used.

Mixing Zone Predictions @ 1Q10

Depth = 1.7265 ft
Length = 298702.73 ft
Velocity = .8444 ft/sec
Residence Time = 98.2647 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 1.02% of the 1Q10 is used.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Town of Glen Lyn STP Permit No.: VA0080837 Version: OWP Guidance Memo 00-2011 (8/24/00)
 Receiving Stream: New River

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	68.2 mg/L	1Q10 (Annual) =	565 MGD	Annual - 1Q10 Mix =	1.02 %	Mean Hardness (as CaCO3) =	68.2 mg/L
90% Temperature (Annual) =	25.4 deg C	7Q10 (Annual) =	653 MGD	- 7Q10 Mix =	55.66 %	90% Temp (Annual) =	25.4 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	775 MGD	- 30Q10 Mix =	64.96 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	8.62 SU	1Q10 (Wet season) =	762 MGD	Wet Season - 1Q10 Mix =	%	90% Maximum pH =	8.62 SU
10% Maximum pH =	7.29 SU	30Q10 (Wet season) =	1395 MGD	- 30Q10 Mix =	%	10% Maximum pH =	7.29 SU
Tier Designation (1 or 2) =	2	30Q5 =	866 MGD			Discharge Flow =	0.04 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	1939 MGD				
Trout Present Y/N? =	n	Annual Average =	3178 MGD				
Early Life Stages Present Y/N? =	y						

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Acenaphthene	0	-	-	na	2.7E+03	-	-	na	5.8E+07	-	-	na	2.7E+02	-	-	na
Acrolein	0	-	-	na	7.8E+02	-	-	na	1.7E+07	-	-	na	7.8E+01	-	-	na
Acrylonitrile ^f	0	-	-	na	6.6E+00	-	-	na	3.2E+05	-	-	na	6.6E-01	-	-	na
Aldrin ^c	0	3.0E+00	-	na	1.4E-03	4.4E+02	-	na	6.8E+01	7.5E-01	-	na	1.4E-04	1.1E+04	-	na
Ammonia-N (mg/l) (Yearly)	0	2.55E+00	4.41E-01	na	-	3.7E+02	5.6E+03	na	-	6.38E-01	1.10E-01	na	-	9.0E+03	2.1E+03	na
Ammonia-N (mg/l) (High Flow)	0	2.55E+00	8.89E-01	na	-	2.6E+00	8.9E-01	na	-	6.38E-01	2.22E-01	na	-	1.2E+04	7.8E+03	na
Anthracene	0	-	-	na	1.1E+05	-	-	na	2.4E+09	-	-	na	1.1E+04	-	-	na
Antimony	0	-	-	na	4.3E+03	-	-	na	9.3E+07	-	-	na	4.3E+02	-	-	na
Arsenic	0	3.4E+02	1.5E+02	na	-	4.9E+04	1.4E+06	na	-	8.5E+01	3.8E+01	na	-	1.2E+06	6.1E+05	na
Barium	0	-	-	na	-	-	-	na	-	-	-	na	-	-	-	na
Benzene ^c	0	-	-	na	7.1E+02	-	-	na	3.4E+07	-	-	na	7.1E+01	-	-	na
Benzidine ^c	0	-	-	na	5.4E-03	-	-	na	2.6E+02	-	-	na	5.4E-04	-	-	na
Benzo (a) anthracene ^c	0	-	-	na	4.9E-01	-	-	na	2.4E+04	-	-	na	4.9E-02	-	-	na
Benzo (b) fluoranthene ^c	0	-	-	na	4.9E-01	-	-	na	2.4E+04	-	-	na	4.9E-02	-	-	na
Benzo (k) fluoranthene ^c	0	-	-	na	4.9E-01	-	-	na	2.4E+04	-	-	na	4.9E-02	-	-	na
Benzo (a) pyrene ^c	0	-	-	na	4.9E-01	-	-	na	2.4E+04	-	-	na	4.9E-02	-	-	na
Bis(2-Chloroethyl) Ether	0	-	-	na	1.4E+01	-	-	na	3.0E+05	-	-	na	1.4E+00	-	-	na
Bis(2-Chloroisopropyl) Ether	0	-	-	na	1.7E+05	-	-	na	3.7E+09	-	-	na	1.7E+04	-	-	na
Bromofom ^c	0	-	-	na	3.6E+03	-	-	na	1.7E+08	-	-	na	3.6E+02	-	-	na
Butylbenzylphthalate	0	-	-	na	5.2E+03	-	-	na	1.1E+08	-	-	na	5.2E+02	-	-	na
Cadmium	0	2.5E+00	8.4E-01	na	-	3.7E+02	7.6E+03	na	-	6.4E-01	2.1E-01	na	-	9.0E+03	3.4E+03	na
Carbon Tetrachloride ^c	0	-	-	na	4.4E+01	-	-	na	2.1E+06	-	-	na	4.4E+00	-	-	na
Chlordane ^c	0	2.4E+00	4.3E-03	na	2.2E-02	3.5E+02	3.9E+01	na	1.1E+03	6.0E-01	1.1E-03	na	2.2E-03	8.5E+03	1.8E+01	na
Chloride	0	8.6E+05	2.3E+05	na	-	1.2E+08	2.1E+09	na	-	2.2E+05	5.8E+04	na	-	3.0E+09	9.4E+08	na
TRC	0	1.9E+01	1.1E+01	na	-	2.8E+03	1.0E+05	na	-	4.8E+00	2.8E+00	na	-	6.7E+04	4.5E+04	na
Chlorobenzene	0	-	-	na	2.1E+04	-	-	na	4.5E+08	-	-	na	2.1E+03	-	-	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorobromomethane ^g	0	--	--	na	3.4E+02	--	--	na	1.6E+07	--	--	na	3.4E+01	--	--	na	1.6E+06	--	--	na	1.6E+06
Chloroform ^c	0	--	--	na	2.9E+04	--	--	na	1.4E+09	--	--	na	2.9E+03	--	--	na	1.4E+08	--	--	na	1.4E+08
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	9.3E+07	--	--	na	4.3E+02	--	--	na	9.3E+06	--	--	na	9.3E+06
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	8.7E+06	--	--	na	4.0E+01	--	--	na	8.7E+05	--	--	na	8.7E+05
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.2E+01	3.7E+02	na	--	2.1E-02	1.0E-02	na	--	2.9E+02	1.7E+02	na	--	1.2E+01	1.7E+02	na	--
Chromium III	0	4.2E+02	5.4E+01	na	--	6.0E+04	4.9E+05	na	--	1.0E+02	1.4E+01	na	--	1.5E+06	2.2E+05	na	--	6.0E+04	2.2E+05	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	2.3E+03	1.0E+05	na	--	4.0E+00	2.8E+00	na	--	5.7E+04	4.5E+04	na	--	2.3E+03	4.5E+04	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Chrysene ^c	0	--	--	na	4.9E-01	--	--	na	2.4E+04	--	--	na	4.9E-02	--	--	na	2.4E+03	--	--	na	2.4E+03
Copper	0	9.4E+00	6.5E+00	na	--	1.4E+03	5.9E+04	na	--	2.3E+00	1.6E+00	na	--	3.3E+04	2.6E+04	na	--	1.4E+03	2.6E+04	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	3.2E+03	4.7E+04	na	4.7E+09	5.5E+00	1.3E+00	na	2.2E+04	7.8E+04	2.1E+04	na	4.7E+08	3.2E+03	2.1E+04	na	4.7E+08
DDD ^c	0	--	--	na	8.4E-03	--	--	na	4.1E+02	--	--	na	8.4E-04	--	--	na	4.1E+01	--	--	na	4.1E+01
DDE ^c	0	--	--	na	5.9E-03	--	--	na	2.9E+02	--	--	na	5.9E-04	--	--	na	2.9E+01	--	--	na	2.9E+01
DDT ^c	0	1.1E+00	1.0E-03	na	5.9E-03	1.6E+02	9.1E+00	na	2.9E+02	2.8E-01	2.5E-04	na	5.9E-04	3.9E+03	4.1E+00	na	2.9E+01	1.6E+02	4.1E+00	na	2.9E+01
Demeton	0	--	1.0E-01	na	--	--	9.1E+02	na	--	--	2.5E-02	na	--	--	4.1E+02	na	--	--	4.1E+02	na	--
Dibenz(a,h)anthracene ^c	0	--	--	na	4.9E-01	--	--	na	2.4E+04	--	--	na	4.9E-02	--	--	na	2.4E+03	--	--	na	2.4E+03
Diethyl phthalate	0	--	--	na	1.2E+04	--	--	na	2.6E+08	--	--	na	1.2E+03	--	--	na	2.6E+07	--	--	na	2.6E+07
Dichloromethane	0	--	--	na	1.6E+04	--	--	na	7.8E+08	--	--	na	1.6E+03	--	--	na	7.8E+07	--	--	na	7.8E+07
(Methylene Chloride) ^c	0	--	--	na	1.7E+04	--	--	na	3.7E+08	--	--	na	1.7E+03	--	--	na	3.7E+07	--	--	na	3.7E+07
1,2-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	5.6E+07	--	--	na	2.6E+02	--	--	na	5.6E+06	--	--	na	5.6E+06
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	5.6E+07	--	--	na	2.6E+02	--	--	na	5.6E+06	--	--	na	5.6E+06
1,4-Dichlorobenzene	0	--	--	na	7.7E-01	--	--	na	3.7E+04	--	--	na	7.7E-02	--	--	na	3.7E+03	--	--	na	3.7E+03
3,3-Dichlorobenzidine ^g	0	--	--	na	4.6E+02	--	--	na	2.2E+07	--	--	na	4.6E+01	--	--	na	2.2E+06	--	--	na	2.2E+06
Dichlorobromomethane ^c	0	--	--	na	9.9E+02	--	--	na	4.8E+07	--	--	na	9.9E+01	--	--	na	4.8E+06	--	--	na	4.8E+06
1,2-Dichloroethane ^c	0	--	--	na	1.7E+04	--	--	na	3.7E+08	--	--	na	1.7E+03	--	--	na	3.7E+07	--	--	na	3.7E+07
1,1-Dichloroethylene	0	--	--	na	1.4E+05	--	--	na	3.0E+09	--	--	na	1.4E+04	--	--	na	3.0E+08	--	--	na	3.0E+08
1,2-trans-dichloroethylene	0	--	--	na	7.9E+02	--	--	na	1.7E+07	--	--	na	7.9E+01	--	--	na	1.7E+06	--	--	na	1.7E+06
2,4-Dichlorophenol	0	--	--	na	3.9E+02	--	--	na	1.9E+07	--	--	na	3.9E+01	--	--	na	1.9E+06	--	--	na	1.9E+06
acetic acid (2,4-D)	0	--	--	na	1.7E+03	--	--	na	3.7E+07	--	--	na	1.7E+02	--	--	na	3.7E+06	--	--	na	3.7E+06
1,2-Dichloropropane ^g	0	--	--	na	1.4E-03	--	--	na	6.8E+01	6.0E-02	1.4E-02	na	1.4E-04	8.5E+02	2.3E+02	na	6.8E+00	3.5E+01	2.3E+02	na	6.8E+00
1,3-Dichloropropene	0	2.4E-01	5.6E-02	na	1.2E+05	--	--	na	2.6E+09	--	--	na	1.2E+04	--	--	na	2.6E+08	--	--	na	2.6E+08
Dieldrin ^c	0	--	--	na	5.9E+01	--	--	na	2.9E+06	--	--	na	5.9E+00	--	--	na	2.9E+05	--	--	na	2.9E+05
Diethyl Phthalate	0	--	--	na	2.3E+03	--	--	na	5.0E+07	--	--	na	2.3E+02	--	--	na	5.0E+06	--	--	na	5.0E+06
Di-2-Ethylhexyl Phthalate ^c	0	--	--	na	2.9E+06	--	--	na	6.3E+10	--	--	na	2.9E+05	--	--	na	6.3E+09	--	--	na	6.3E+09
2,4-Dimethylphenol	0	--	--	na	1.2E+04	--	--	na	3.0E+08	--	--	na	1.2E+03	--	--	na	3.0E+07	--	--	na	3.0E+07
Dimethyl Phthalate	0	--	--	na	1.4E+04	--	--	na	3.0E+08	--	--	na	1.4E+03	--	--	na	3.0E+07	--	--	na	3.0E+07
Di-n-Butyl Phthalate	0	--	--	na	7.65E+02	--	--	na	1.7E+07	--	--	na	7.7E+01	--	--	na	1.7E+06	--	--	na	1.7E+06
2,4 Dinitrophenol	0	--	--	na	9.1E+01	--	--	na	4.4E+06	--	--	na	9.1E+00	--	--	na	4.4E+05	--	--	na	4.4E+05
2-Methyl-4,6-Dinitrophenol	0	--	--	na	1.2E-06	--	--	na	na	--	--	na	1.2E-07	--	--	na	9.5E-03	--	--	na	na
2,4-Dinitrotoluene ^c	0	--	--	na	5.4E+00	--	--	na	2.6E+05	--	--	na	5.4E-01	--	--	na	2.6E+04	--	--	na	2.6E+04
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppt)	0	2.2E-01	5.6E-02	na	2.4E+02	3.2E+01	5.1E+02	na	5.2E+06	5.5E-02	1.4E-02	na	2.4E+01	7.8E+02	2.3E+02	na	5.2E+05	3.2E+01	2.3E+02	na	5.2E+05
1,2-Diphenylhydrazine ^g	0	2.2E-01	5.6E-02	na	2.4E+02	3.2E+01	5.1E+02	na	5.2E+06	5.5E-02	1.4E-02	na	2.4E+01	7.8E+02	2.3E+02	na	5.2E+05	3.2E+01	2.3E+02	na	5.2E+05
Alpha-Endosulfan	0	--	--	na	2.4E+02	--	--	na	5.2E+06	--	--	na	2.4E+01	--	--	na	5.2E+05	--	--	na	5.2E+05
Beta-Endosulfan	0	--	--	na	2.4E+02	--	--	na	5.2E+06	--	--	na	2.4E+01	--	--	na	5.2E+05	--	--	na	5.2E+05
Endosulfan Sulfate	0	--	--	na	8.1E-01	1.2E+01	3.3E+02	na	1.8E+04	2.2E-02	9.0E-03	na	8.1E-02	3.0E+02	1.5E+02	na	1.8E+03	1.2E+01	1.5E+02	na	1.8E+03
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	--	--	na	1.8E+04	--	--	na	8.1E-02	--	--	na	1.8E+03	--	--	na	1.8E+03
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	1.8E+04	--	--	na	8.1E-02	--	--	na	1.8E+03	--	--	na	1.8E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wastload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+03	--	--	na	6.3E+07	--	--	na
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+01	--	--	na	8.0E+05	--	--	na
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+03	--	--	na	3.0E+07	--	--	na
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Guthion	0	--	1.0E-02	na	--	--	9.1E+01	na	--	--	2.5E-03	na	--	--	4.1E+01	na
Heptachlor ^c	0	5.2E-01	3.8E-03	na	2.1E-03	7.5E+01	3.5E+01	na	2.1E-04	1.3E-01	9.5E-04	na	1.0E+01	7.5E+01	1.6E+01	na
Heptachlor Epoxide ^d	0	5.2E-01	3.8E-03	na	1.1E-03	7.5E+01	3.5E+01	na	1.1E-04	1.3E-01	9.5E-04	na	5.3E+00	7.5E+01	1.6E+01	na
Hexachlorobenzene ^d	0	--	--	na	7.7E-03	--	--	na	7.7E-04	--	--	na	3.7E+01	--	--	na
Hexachlorobutadiene ^d	0	--	--	na	5.0E+02	--	--	na	5.0E+01	--	--	na	2.4E+06	--	--	na
Hexachlorocyclohexane	0	--	--	na	1.3E-01	--	--	na	1.3E-02	--	--	na	6.3E+02	--	--	na
Alpha-BHC ^c	0	--	--	na	4.6E-01	--	--	na	4.6E-02	--	--	na	2.2E+03	--	--	na
Hexachlorocyclohexane	0	--	--	na	6.3E-01	1.4E+02	--	na	6.3E-02	2.4E-01	--	na	3.1E+03	1.4E+02	--	na
Beta-BHC ^c	0	--	--	na	8.9E+01	--	--	na	8.9E+00	--	--	na	3.7E+07	--	--	na
Hexachlorocyclohexane	0	--	--	na	4.3E+06	--	--	na	4.3E+05	--	--	na	4.3E+05	--	--	na
Gamma-BHC ^c (Lindane)	0	9.5E-01	na	na	6.3E-01	1.4E+02	--	na	6.3E-02	2.4E-01	--	na	3.1E+03	1.4E+02	--	na
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+03	--	--	na	3.7E+07	--	--	na
Hexachloroethane ^f	0	--	--	na	8.9E+01	--	--	na	8.9E+00	--	--	na	4.3E+05	--	--	na
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.8E+04	na	--	--	5.0E-01	na	--	--	8.2E+03	na
Indeno (1,2,3-cd) pyrene ^c	0	--	--	na	4.9E-01	--	--	na	4.9E-02	--	--	na	2.4E+03	--	--	na
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Isophorone ^f	0	--	--	na	2.6E+04	--	--	na	2.6E+03	--	--	na	1.3E+08	--	--	na
Keponne	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na
Lead	0	7.3E+01	8.3E+00	na	--	1.1E+04	7.5E+04	na	--	1.8E+01	2.1E+00	na	--	1.1E+04	3.4E+04	na
Malathion	0	--	1.0E-01	na	--	--	9.1E+02	na	--	--	2.5E-02	na	--	--	4.1E+02	na
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	2.0E+02	7.0E+03	na	5.1E-03	3.5E-01	1.9E-01	na	1.1E+02	2.0E+02	3.1E+03	na
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+02	--	--	na	8.7E+06	--	--	na
Methoxychlor	0	--	3.0E-02	na	--	--	2.7E+02	na	--	--	7.5E-03	na	--	--	1.2E+02	na
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+03	--	--	na	4.5E+07	--	--	na
Nickel	0	1.3E+02	1.5E+01	na	4.6E+03	1.9E+04	1.3E+05	na	4.6E+02	3.3E+01	3.7E+00	na	1.0E+07	1.9E+04	6.0E+04	na
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+02	--	--	na	4.1E+06	--	--	na
N-Nitrosodimethylamine ^g	0	--	--	na	8.1E+01	--	--	na	8.1E+00	--	--	na	3.9E+05	--	--	na
N-Nitrosodiphenylamine ^g	0	--	--	na	1.6E+02	--	--	na	1.6E+01	--	--	na	7.8E+05	--	--	na
N-Nitrosodi-n-propylamine ^g	0	--	--	na	1.4E+01	--	--	na	1.4E+00	--	--	na	6.8E+04	--	--	na
Parathion	0	6.5E-02	1.3E-02	na	--	9.4E+00	1.2E+02	na	--	1.6E-02	3.3E-03	na	--	9.4E+00	5.3E+01	na
PCB-1016	0	--	1.4E-02	na	--	--	1.3E+02	na	--	--	3.5E-03	na	--	--	5.7E+01	na
PCB-1221	0	--	1.4E-02	na	--	--	1.3E+02	na	--	--	3.5E-03	na	--	--	5.7E+01	na
PCB-1232	0	--	1.4E-02	na	--	--	1.3E+02	na	--	--	3.5E-03	na	--	--	5.7E+01	na
PCB-1242	0	--	1.4E-02	na	--	--	1.3E+02	na	--	--	3.5E-03	na	--	--	5.7E+01	na
PCB-1248	0	--	1.4E-02	na	--	--	1.3E+02	na	--	--	3.5E-03	na	--	--	5.7E+01	na
PCB-1254	0	--	1.4E-02	na	--	--	1.3E+02	na	--	--	3.5E-03	na	--	--	5.7E+01	na
PCB-1260	0	--	1.4E-02	na	--	--	1.3E+02	na	--	--	3.5E-03	na	--	--	5.7E+01	na
PCB Total ^f	0	--	--	na	1.7E-03	--	--	na	1.7E-04	--	--	na	8.2E+00	--	--	na

Parameter (ug/l unless noted) ^c	Background			Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	HH
Pentachlorophenol ^c	0	1.2E+01	9.0E+00	na	8.2E+01	1.7E+03	8.1E+04	na	4.0E+06	2.9E+00	2.2E+00	na	8.2E+00	4.1E+04	3.7E+04	1.7E+03	3.7E+04	4.0E+05
Phenol	0	--	--	na	4.6E+06	--	--	na	1.0E+11	--	--	na	4.6E+05	--	--	--	na	1.0E+10
Pyrene	0	--	--	na	1.1E+04	--	--	na	2.4E+08	--	--	na	1.1E+03	--	--	--	na	2.4E+07
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	--	na	--
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	--	--	na	1.5E+01	--	--	na	3.2E+05	--	--	na	1.5E+00	--	--	--	na	3.2E+04
Sironium-90	0	--	--	na	4.0E+00	--	--	na	8.7E+04	--	--	na	4.0E+01	--	--	--	na	8.7E+03
Tritium	0	--	--	na	8.0E+00	--	--	na	1.7E+05	--	--	na	8.0E+01	--	--	--	na	1.7E+04
Selenium	0	--	--	na	2.0E+04	--	--	na	4.3E+08	--	--	na	2.0E+03	--	--	--	na	4.3E+07
Silver	0	2.0E+01	5.0E+00	na	1.1E+04	2.9E+03	4.5E+04	na	2.4E+08	5.0E+00	1.3E+00	na	1.1E+03	7.1E+04	2.0E+04	2.9E+03	2.0E+04	2.4E+07
Sulfate	0	1.8E+00	--	na	--	2.6E+02	--	na	--	4.5E+01	--	na	--	6.3E+03	--	2.6E+02	--	--
1,1,2,2-Tetrachloroethane	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	--	na	--
Tetrachloroethylene	0	--	--	na	1.1E+02	--	--	na	5.3E+06	--	--	na	1.1E+01	--	--	--	na	5.3E+05
Thallium	0	--	--	na	8.9E+01	--	--	na	4.3E+06	--	--	na	8.9E+00	--	--	--	na	4.3E+05
Toluene	0	--	--	na	6.3E+00	--	--	na	1.4E+05	--	--	na	6.3E+01	--	--	--	na	1.4E+04
Total dissolved solids	0	--	--	na	2.0E+05	--	--	na	4.3E+09	--	--	na	2.0E+04	--	--	--	na	4.3E+08
Toxaphene ^c	0	7.3E-01	2.0E-04	na	7.5E-03	1.1E+02	1.8E+00	na	3.6E+02	1.8E-01	5.0E-05	na	7.5E-04	2.6E+03	8.2E-01	1.1E+02	8.2E-01	3.6E+01
Tributyltin	0	4.6E-01	6.3E-02	na	--	6.7E+01	5.7E+02	na	--	1.2E-01	1.6E-02	na	--	1.6E+03	2.6E+02	6.7E+01	2.6E+02	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	2.0E+07	--	--	na	9.4E+01	--	--	--	na	2.0E+06
1,1,2-Trichloroethane	0	--	--	na	4.2E+02	--	--	na	2.0E+07	--	--	na	4.2E+01	--	--	--	na	2.0E+06
Trichloroethylene ^c	0	--	--	na	8.1E+02	--	--	na	3.9E+07	--	--	na	8.1E+01	--	--	--	na	3.9E+06
2,4,6-Trichlorophenol ^c	0	--	--	na	6.5E+01	--	--	na	3.2E+06	--	--	na	6.5E+00	--	--	--	na	3.2E+05
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	--	na	--
Vinyl Chloride ^d	0	--	--	na	6.1E+01	--	--	na	3.0E+06	--	--	na	6.1E+00	--	--	--	na	--
Zinc	0	8.5E+01	8.5E+01	na	6.9E+04	1.2E+04	7.8E+05	na	1.5E+09	2.1E+01	2.1E+01	na	6.9E+03	3.0E+05	3.5E+05	1.2E+04	3.5E+05	3.0E+05

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 3Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	9.3E+06
Arsenic	2.0E+04
Barium	na
Cadmium	1.5E+02
Chromium III	2.4E+04
Chromium VI	9.3E+02
Copper	5.4E+02
Iron	na
Lead	4.2E+03
Manganese	na
Mercury	8.1E+01
Nickel	7.7E+03
Selenium	1.2E+03
Silver	1.0E+02
Zinc	4.9E+03

Note: do not use QL's lower than the minimum QL's provided in agency guidance

4/2/2009 1:08:50 PM

Facility = Town of Glen Lyn STP

Chemical = ammonia

Chronic averaging period = 30

WLAa = 370

WLAc = 5600

Q.L. = 0.2

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

4/2/2009 1:10:11 PM

Facility = Town of Glen Lyn STP

Chemical = TRC

Chronic averaging period = 4

WLAa = 2800

WLAc = 100000

Q.L. = 100

samples/mo. = 30

samples/wk. = 8

Summary of Statistics:

observations = 1

Expected Value = 2000

Variance = 1440000

C.V. = 0.6

97th percentile daily values = 4866.83

97th percentile 4 day average = 3327.58

97th percentile 30 day average = 2412.10

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 2800

Average Weekly limit = 1670.21424052622

Average Monthly Limit = 1387.7392588295

The data are:

2000